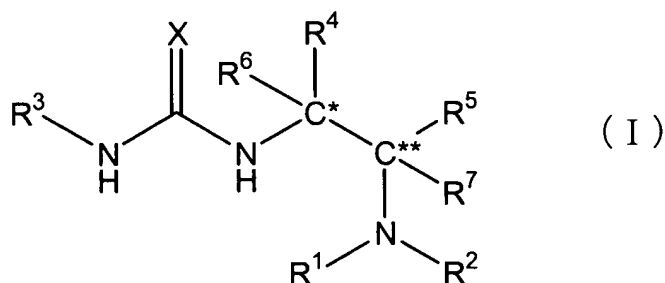


AMENDMENTS TO THE CLAIMS

This listing of claims will replace all prior versions and listings of claims in the application:

LISTING OF CLAIMS:

1. (original): A compound represented by the formula (I):



wherein

X is an oxygen atom or a sulfur atom;

C* and C** are each independently an asymmetric carbon;

R¹ and R² are

the same or different and each is a lower alkyl group optionally having substituent(s), an aralkyl group optionally having substituent(s) or an aryl group optionally having substituent(s), or R¹ and R² optionally form, together with the nitrogen atom they are bonded to, an aliphatic heterocycle optionally having substituent(s) (the aliphatic heterocycle is optionally condensed with an aromatic hydrocarbon);

R³ is

a lower alkyl group optionally having substituent(s), an aralkyl group optionally having substituent(s), an aryl group optionally having substituent(s) or a heteroaryl group optionally having substituent(s);

R⁴ and R⁵ are

the same or different and each is a lower alkyl group optionally having substituent(s), an aralkyl group optionally having substituent(s) or an aryl group optionally having substituent(s), or R⁴ and R⁵ optionally form, together with the asymmetric carbons they are respectively bonded to, a homocyclic ring optionally having substituent(s) or a heterocycle optionally having substituent(s); and

R⁶ and R⁷ are

the same or different and each is a hydrogen atom or a lower alkyl group optionally having substituent(s),

or a salt thereof.

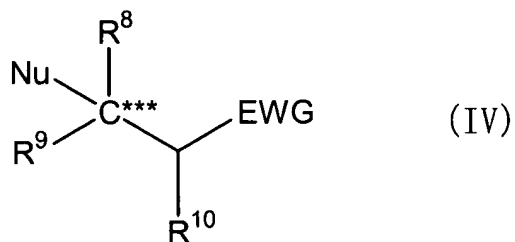
2. (original): The compound of claim 1, wherein X is a sulfur atom, or a salt thereof.

3. (currently amended): The compound of claim 1-~~or 2~~, wherein R⁴ and R⁵ form, together with the asymmetric carbons they are respectively bonded to, cyclopropane, cyclobutane, cyclopentane or cyclohexane, or a salt thereof.

4. (original): The compound of claim 3, wherein R^4 and R^5 form cyclohexane together with the asymmetric carbons they are respectively bonded to, and R^6 and R^7 are each a hydrogen atom, or a salt thereof.

5. (original): The compound of claim 4, wherein the absolute configurations of C^* and C^{**} are both S-configurations or both R-configurations, or a salt thereof.

6. (currently amended): A method of producing a compound represented by the formula (IV):



wherein

C^{***} is an asymmetric carbon;

R^8 , R^9 and R^{10} are

the same or different and each is a hydrogen atom, a lower alkyl group optionally having substituent(s), an aralkyl group optionally having substituent(s), an aryl group optionally having substituent(s), a heteroaryl group optionally having substituent(s), a hetero atom optionally having substituent(s) or an electron withdrawing group, or R^9 and R^{10} optionally form, together with the carbon atoms they are respectively bonded to, a homocyclic ring optionally having substituent(s) or a heterocycle optionally having substituent(s), provided that R^8 and R^9 are not the same groups;

EWG is

an electron withdrawing group selected from a nitro group, a cyano group, $-\text{COR}^{11}$, $-\text{SO}_2\text{R}^{12}$, $-\text{COOR}^{13}$ and $-\text{PO}(\text{OR}^{14})(\text{OR}^{15})$

wherein

R^{11} , R^{12} , R^{13} , R^{14} and R^{15} are the same or different and each is a hydrogen atom, a lower alkyl group optionally having substituent(s), an aralkyl group optionally having substituent(s), an aryl group optionally having substituent(s) or a heteroaryl group optionally having substituent(s), or R^{11} and R^8 , or R^{11} and R^{10} , optionally form, together with the carbon atom(s) they are respectively bonded to, a homocyclic ring having an electron withdrawing group and optionally having substituent(s); and

Nu is

$-\text{CR}^{16}(\text{COR}^{17})(\text{COR}^{18})$, $-\text{OR}^{19}$, $-\text{SR}^{20}$, $-\text{NR}^{21}\text{R}^{22}$, $-\text{C}(\text{NO}_2)\text{R}^{23}\text{R}^{24}$

wherein

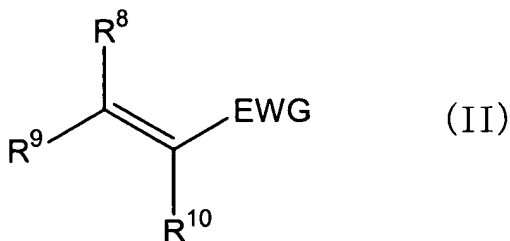
R^{16} is a hydrogen atom, a halogen atom, a hetero atom having substituent(s), a lower alkyl group optionally having substituent(s) or an aryl group optionally having substituent(s);

R^{17} and R^{18} are the same or different and each is a hydrogen atom, a lower alkyl group, a lower alkoxy group, a mono-lower alkylamino group or a di-lower alkylamino group;

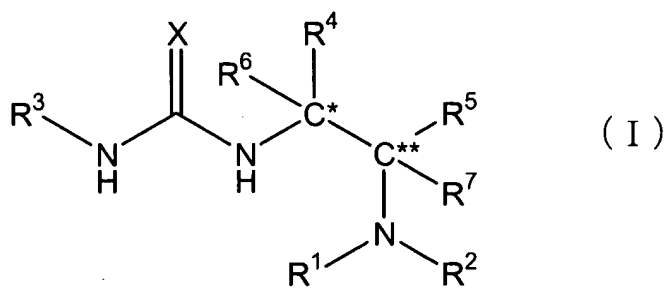
R^{16} and R^{17} optionally form, together with the carbon atoms they are respectively bonded to, a homocyclic ring optionally having substituent(s) or a heterocycle optionally having substituent(s) (the homocyclic ring and heterocycle are optionally condensed with an aromatic hydrocarbon); and R^{19} , R^{20} , R^{21} , R^{22} , R^{23} and R^{24} are the same or different and each is a hydrogen atom, a lower alkyl group optionally having substituent(s), an aralkyl group optionally having substituent(s), an aryl group optionally having substituent(s) or a heteroaryl group optionally having substituent(s), or R^{21} and R^{22} optionally form, together with the nitrogen atom they are bonded to, an aliphatic heterocycle optionally having substituent(s), or

an azido group,

or a salt thereof, which comprises conjugately adding a nucleophilic reagent represented by the formula (III): H-Nu (III) wherein Nu is as defined above, to a compound represented by the formula (II):



wherein each symbol is as defined above, or a salt thereof, in the presence of a compound represented by the formula (I):



wherein

X is an oxygen atom or a sulfur atom;

C* and C** are each independently an asymmetric carbon;

R¹ and R² are

the same or different and each is a lower alkyl group optionally having substituent(s), an
aralkyl group optionally having substituent(s) or an aryl group optionally having
substituent(s), or R¹ and R² optionally form, together with the nitrogen atom they are
bonded to, an aliphatic heterocycle optionally having substituent(s) (the aliphatic
heterocycle is optionally condensed with an aromatic hydrocarbon);

R³ is

a lower alkyl group optionally having substituent(s), an aralkyl group optionally having
substituent(s), an aryl group optionally having substituent(s) or a heteroaryl group
optionally having substituent(s);

R⁴ and R⁵ are

the same or different and each is a lower alkyl group optionally having substituent(s), an
aralkyl group optionally having substituent(s) or an aryl group optionally having

substituent(s), or R⁴ and R⁵ optionally form, together with the asymmetric carbons they are respectively bonded to, a homocyclic ring optionally having substituent(s) or a heterocycle optionally having substituent(s); and

R⁶ and R⁷ are

the same or different and each is a hydrogen atom or a lower alkyl group optionally having substituent(s),

or a salt thereof~~for a salt thereof of any of claims 1 to 5.~~

7. (original): The method of claim 6, wherein Nu is -CR¹⁶(COR¹⁷)(COR¹⁸),
-OR¹⁹, -SR²⁰, -NR²¹R²², -C(NO₂)R²³R²⁴

wherein

R¹⁶ is a hydrogen atom, a halogen atom, a lower alkyl group optionally having substituent(s) or an aryl group optionally having substituent(s);

R¹⁷ and R¹⁸ are the same or different and each is a hydrogen atom, a lower alkyl group, a lower alkoxy group, a mono-lower alkylamino group or a di-lower alkylamino group;

R¹⁹, R²⁰, R²¹, R²², R²³ and R²⁴ are the same or different and each is a hydrogen atom, a lower alkyl group optionally having substituent(s), an aralkyl group optionally having substituent(s), an aryl group optionally having substituent(s) or a heteroaryl group optionally having substituent(s), or R²¹ and R²² optionally form, together with the nitrogen atom they are bonded to, an aliphatic heterocycle optionally having substituent(s), or

an azido group.

8. (currently amended): The method of claim ~~6 or 7~~, wherein the electron withdrawing group for EWG is a nitro group.

9. (currently amended): The method of ~~any of claims 6 to 8~~ claim 6, wherein R⁸ and R¹⁰ are each a hydrogen atom, and R⁹ is a lower alkyl group optionally having substituent(s), an aryl group optionally having substituent(s) or a heteroaryl group optionally having substituent(s).

10. (currently amended): The method of ~~any of claims 6 to 9~~ claim 6, wherein the nucleophilic reagent (III) is represented by HCR¹⁶(COR¹⁷)(COR¹⁸) wherein each symbol is as defined ~~above~~ in claim 6.

11. (original): The method of claim 10, wherein R¹⁶ is a hydrogen atom, a lower alkyl group optionally having substituent(s), a halogen atom or a hetero atom having substituent(s), and R¹⁷ and R¹⁸ are the same or different and each is a lower alkoxy group.

12. (original): The method of claim 11, wherein R¹⁶ is a hydrogen atom, methyl, a chlorine atom, methoxy or tert-butoxycarbonylamino, and R¹⁷ and R¹⁸ are each methoxy or ethoxy.

13. (original): The method of claim 10, wherein R¹⁶ and R¹⁷ optionally form, together with the carbon atoms they are respectively bonded to, a homocyclic ring optionally having substituent(s) (the homocyclic ring is optionally condensed with an aromatic hydrocarbon).

14. (original): The method of claim 13, wherein the homocyclic ring is 1,2,3,4-tetrahydronaphthalen-1-one.

15. (currently amended): The method of ~~any of claims 6 to 14~~claim 6, which is performed in at least one solvent selected from toluene and methylene chloride.

16. (currently amended): The method of ~~any of claims 6 to 14~~claim 6, which is performed without a solvent.